

## CLAIMS

What is claimed is:

1. An instance browser comprising:  
a repository of class and relation definitions;  
a server for responding to queries relating to class and relation definitions in said repository; and  
a graphical user interface including icons for representing instances of classes.
2. The instance browser of claim 1 wherein an icon is associated with an instance using a global identifier (GID).
3. The instance browser of claim 2 wherein the GID is a function in the repository.
4. The instance browser of claim 3 wherein the GID is a function of the largest class in the repository.
5. The instance browser of claim 1 wherein an icon is associated with an instance based on a view of the instance.
6. The instance browser of claim 1 wherein an image is associated with an icon by the class, an instance of which is represented by the icon.
7. The instance browser of claim 1 wherein an image is associated with an icon by a function from instances to images.
8. The instance browser of claim 7 wherein the function from instances to images is defined within the repository.
9. The instance browser of claim 7 wherein the function from instances to images is selected by a user from among a plurality of functions.

1 10. The instance browser of claim 1 wherein a menu associated with  
2 an icon lists functions having as domain the class, an instance of which is  
3 represented by the icon.

1 11. The instance browser of claim 10 further comprising a function  
2 search tool for searching for functions having as domain the class, an instance of  
3 which is represented by the icon.

1 12. The instance browser of claim 11 wherein said function search  
2 tool searches over a network.

1 13. The instance browser of claim 11 wherein said function search  
2 tool searches over a central repository.

1 14. The instance browser of claim 11 wherein said function search  
2 tool searches for functions having as domain the class, an instance of which is  
3 represented by the icon, when a user requests to see the menu associated with the  
4 icon.

1 15. The instance browser of claim 10 wherein icons are created for  
2 values of listed functions.

1 16. The instance browser of claim 1 wherein said graphical user  
2 interface displays collections of icons for collections of instances of classes.

1 17. The instance browser of claim 16 wherein a collection of  
2 instances is defined by a logical term.

1 18. The instance browser of claim 17 wherein the logical term is a  
2 single relation from the ontology with instances specified for all but one  
3 parameter.

1 19. The instance browser of claim 17 further comprising an instance  
2 search tool for searching for instances to display in the collection.

1 20. The instance browser of claim 19 wherein said instance search  
2 tool searches for instances over a network.

1 21. The instance browser of claim 19 wherein said instance search  
2 tool searches for instances over a central repository.

1 22. The instance browser of claim 19 wherein said instance search  
2 tool includes an inference engine.

1 23. The instance browser of claim 16 wherein said graphical user  
2 interface presents instances of a collection grouped by subclasses to which they  
3 belong.

4 24. The instance browser of claim 1 further comprising a filter, to  
5 filter at least one of classes, relations and instances based on authorship.

6 25. A method for instance browsing comprising:  
7 managing a repository of class and relation definitions, and  
8 instance documents for instances of classes and for tuples of relations;  
9 responding to queries relating to class and relation definitions in  
10 the repository; and  
11 displaying icons representing instances of classes.

1 26. The method of claim 25 further comprising associating an icon  
2 with an instance using a global identifier (GID).

1 27. The method of claim 26 wherein the GID is a function in the  
2 repository.

1 28. The method of claim 27 wherein the GID is a function of the  
2 largest class in the repository.

1 29. The method of claim 25 further comprising associating an icon  
2 with an instance based on a view of the instance.

30. The method of claim 25 further comprising associating an image with an icon by the class, an instance of which is represented by the icon.

31. The method of claim 25 further comprising associating an image with an icon by a function from instances to images.

32. The method of claim 31 wherein the function from instances to images is defined within the repository.

33. The method of claim 31 wherein the function from instances to images is selected by a user from among a plurality of functions.

34. The method of claim 25 further comprising associating a menu with an icon, the menu listing functions having as domain the class, an instance of which is represented by the icon.

35. The method of claim 34 further comprising searching for functions having as domain the class, an instance of which is represented by the icon.

36. The method of claim 35 wherein said searching searches over a network.

37. The method of claim 35 wherein said searching searches over a central repository.

38. The method of claim 35 wherein said searching searches for functions having as domain the class, an instance of which is represented by the icon, when a user requests to see the menu associated with the icon.

39. The method of claim 34 further comprising creating icons for values of listed functions.

1 40. The method of claim 25 wherein said displaying icons  
2 comprises:

3 searching for instance documents including a given instance and  
4 a reference to an icon associated therewith;

5 searching for instance documents including the given instance  
6 and a caption associated therewith;

7 displaying the icon and the caption associated with the given  
8 instance.

1 41. The method of claim 40 wherein said displaying icons further  
2 comprises attaching a pop-up menu to the displayed icon, comprising:

3 searching for the class, an instance of which is represented by the  
4 icon; and

5 for functions whose domain is the class, adding a corresponding  
6 item to the pop-up menu.

7 42. The method of claim 41 further comprising grouping functions  
8 whose domain is the class into a sub-menu within the pop-up menu.

1 43. The method of claim 41 wherein said displaying icons further  
2 comprises, for functions whose domain is the class:

3 searching for instance documents including the function; and

4 creating an icon for the instance in the instance document.

1 44. The method of claim 43 wherein said searching for instance  
2 documents steps comprise filtering instance documents based on authorship.

1 45. The method of claim 25 wherein said displaying icons  
2 comprises:

3 providing a definition of a collection, including a name of a  
4 relation and an instance for all but one missing class in the domain of the relation;

5 searching for instance documents including the relation;

6 for each instance document including the relation, searching for  
7 tuples where the instance of the instance document is the element in the missing  
8 class from the domain of the relation;

9                   for each instance document including at least one such tuple,  
10                creating an icon for the instance of the instance document.

1                46.               The method of claim 45 wherein said searching for instance  
2                documents comprises filtering instance documents based on authorship.

1                47.               The method of claim 46 wherein said searching searches over a  
2                network.

1                48.               The method of claim 46 wherein said searching searches over a  
2                central repository.

1                49.               The method of claim 46 wherein said searching uses an inference  
2                engine.

50.               The method of claim 45 further comprising deriving a caption for  
the collection.

51.               A distributed ontology system comprising:  
                  a central computer comprising a global ontology directory;  
                  a plurality of ontology server computers, each comprising:  
                                  a repository of class and relation definitions;  
and  
                                  a server for responding to queries relating to  
class and relation definitions in said repository;  
                  a computer network connecting said central computer with said  
plurality of ontology server computers; and  
                  a graphical user interface including icons for representing  
instances of classes.

1                52.               The system of claim 51 wherein an icon is associated with an  
2                instance using a global identifier (GID).

1                53.               The system of claim 52 wherein the GID is a function in the  
2                global ontology directory.

1 54. The system of claim 53 wherein the GID is a function of the  
2 largest class in the global ontology directory.

1 55. The system of claim 51 wherein an icon is associated with an  
2 instance based on a view of the instance.

1 56. The system of claim 51 wherein an image is associated with an  
2 icon by the class, an instance of which is represented by the icon.

1 57. The system of claim 51 wherein an image is associated with an  
2 icon by a function from instances to images.

1 58. The system of claim 57 wherein the function from instances to  
2 images is defined within the global ontology directory.

1 59. The system of claim 57 wherein the function from instances to  
2 images is selected by a user from among a plurality of functions.

1 60. The system of claim 51 wherein a menu associated with an icon  
2 lists functions having as domain the class, an instance of which is represented by  
3 the icon.

1 61. The system of claim 60 further comprising a function search tool  
2 for searching for the functions having as domain the class, an instance of which is  
3 represented by the icon.

1 62. The system of claim 61 wherein said function search tool  
2 searches over a network.

1 63. The system of claim 61 wherein said function search tool  
2 searches over a central repository.

1 64. The system of claim 61 wherein said function search tool  
2 searches for functions having as domain the class, an instance of which is

3 represented by the icon, when a user requests to see the menu associated with the  
4 icon.

1 65. The system of claim 60 wherein icons are created for values of  
2 the listed functions.

1 66. The system of claim 51 wherein said graphical user interface  
2 displays collections of icons for collections of instances of classes.

1 67 The system of claim 66 wherein a collection of instances is  
2 defined by a logical term.

68. The system of claim 67 wherein the logical term is a single  
relation from the ontology with instances specified for all but one parameter.

69 . The system of claim 67 further comprising an instance search  
tool for searching for instances to display in the collection.

70. The system of claim 69 wherein said instance search tool  
searches for instances over a network.

71. The system of claim 69 wherein said instance search tool  
searches for instances over a central repository.

1 72. The system of claim 69 wherein said instance search tool  
2 includes an inference engine.

1 73. The system of claim 66 wherein said graphical user interface  
2 presents instances of a collection grouped by subclasses to which they belong.

1 74. The system of claim 51 further comprising a filter, to filter at  
2 least one of classes, relations and instance documents based on authorship.

1 75. A distributed ontology method comprising:



2 managing a plurality of repositories of class and relation  
3 definitions;  
4 managing a global ontology directory;  
5 responding to queries relating to class and relation definitions in  
6 at least one repository; and  
7 displaying icons representing instances of classes.

1 76. The method of claim 75 further comprising associating an icon  
2 with an instance using a global identifier (GID).

1 77. The method of claim 76 wherein the GID is a function in the  
2 global ontology directory.

1 78. The method of claim 76 wherein the GID is a function of the  
2 largest class in the global ontology directory.

1 79. The method of claim 75 further comprising associating an icon  
2 with an instance based on a view of the instance.

1 80. The method of claim 75 further comprising associating an image  
2 with an icon by the class, an instance of which is represented by the icon.

1 81. The method of claim 75 further comprising associating an image  
2 with an icon by a function from instances to images.

1 82. The method of claim 81 wherein the function from instances to  
2 images is defined within the global ontology directory.

1 83. The method of claim 75 wherein the function from instances to  
2 images is selected by a user from among a plurality of functions.

1 84. The method of claim 75 wherein a menu associated with an icon  
2 lists functions having as domain the class, an instance of which is represented by  
3 the icon.

1 85. The method of claim 84 further comprising searching for  
2 functions having as domain the class, an instance of which is represented by the  
3 icon.

1 86. The method of claim 85 wherein said searching searches over a  
2 network.

1 87. The method of claim 85 wherein said searching searches over a  
2 central repository.

1 88. The method of claim 85 wherein said searching searches for the  
2 functions having as domain the class, an instance of which is represented by the  
3 icon, when a user requests to see the menu associated with the icon.

1 89. The method of claim 84 further comprising creating icons for  
2 values of listed functions.

1 90. The method of claim 75 wherein said displaying icons  
2 comprises:

3 searching for instance documents including a given instance and  
4 a reference to an icon associated therewith;

5 searching for instance documents including the given instance  
6 and a caption associated therewith;

7 displaying the icon and the caption associated with the given  
8 instance.

1 91. The method of claim 90 wherein said displaying icons further  
2 comprises attaching a pop-up menu to the displayed icon, comprising:

3 searching for the class, an instance of which is represented by the  
4 icon; and

5 for functions whose domain is the class, adding a corresponding  
6 item to the pop-up menu.

1 92. The method of claim 91 further comprising grouping functions  
2 whose domain is the class into a sub-menu within the pop-up menu.

1 93. The method of claim 91 wherein said displaying icons further  
2 comprises, for each function having as domain the class, an instance of which is  
3 represented by the icon:

4 searching for instance documents including the function; and  
5 creating an icon for the instance in the instance document.

1 94. The method of claim 93 wherein said searching for instance  
2 documents steps comprise filtering instance documents based on authorship.

1 95. The method of claim 75 wherein said displaying icons  
2 comprises:

3 providing a definition of a collection, including a name of a  
4 relation and an instance for all but one missing class in the domain of the relation;

5 searching for instance documents including the relation;

6 for each instance document including the relation, searching for  
7 tuples where the instance of the instance document is the element in the missing  
8 class from the domain of the relation;

9 for each instance document including at least one such tuple,  
10 creating an icon for the instance of the instance document.

11 96. The method of claim 95 wherein said searching for instance  
12 documents comprises filtering instance documents based on authorship.

1 97. The method of claim 96 wherein said searching searches over a  
2 network.

1 98. The method of claim 96 wherein said searching searches over a  
2 central repository.

1 99. The method of claim 96 wherein said searching uses an inference  
2 engine.

1 100. The method of claim 95 further comprising deriving a caption for  
2 the collection.